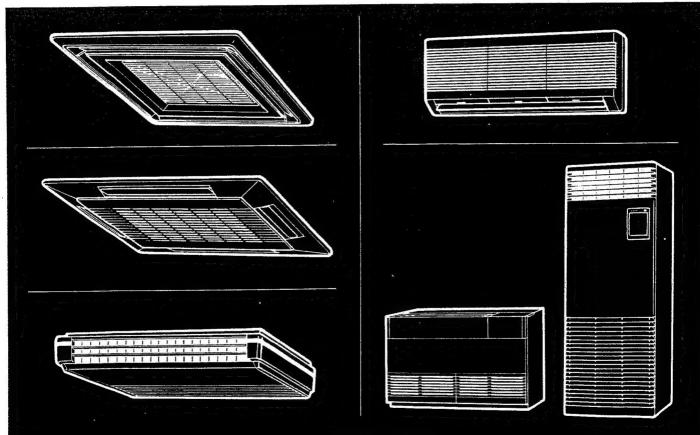
TOSHIBA AIR CONDITIONER

Indoor Unit
RAV-453 CHE, KHE, LHE, UHE
RAV-453 CHE, KHE, LHE
RAV-160 UH
RAV-563 CHE, KHE
RAV-713 CHE8, KHE8, FHE8, LHE8, UHE8
RAV-713 CHE8, KHE8, FHE8, LHE8
RAV-260 UH
RAV-1003 CHE8, FHE8, UHE8
RAV-1003 CHE8, FHE8, UHE8
RAV-360 UH
RAV-1253 CHE8, FHE8, UHE8
RAV-1253 CHE8, FHE8, UHE8
RAV-1253 CHE8, FHE8

RAV-460 UH

SPLIT TYPE

Outdoor Unit RAV-S453 HE RAV-160 AH **RAV-160 AH** RAV-S563 HE **RAV-S713 HE, HE8 RAV-260 AH8 RAV-260 AH8 RAV-S1003 HE8 RAV-360 AH8 RAV-360 AH8 RAV-S1253 HE8 RAV-460 AH8 RAV-460 AH8 RAV-G1003 HE8 RAV-G1253 HE8**

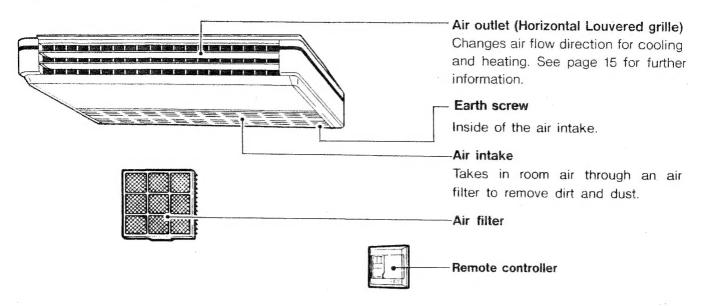


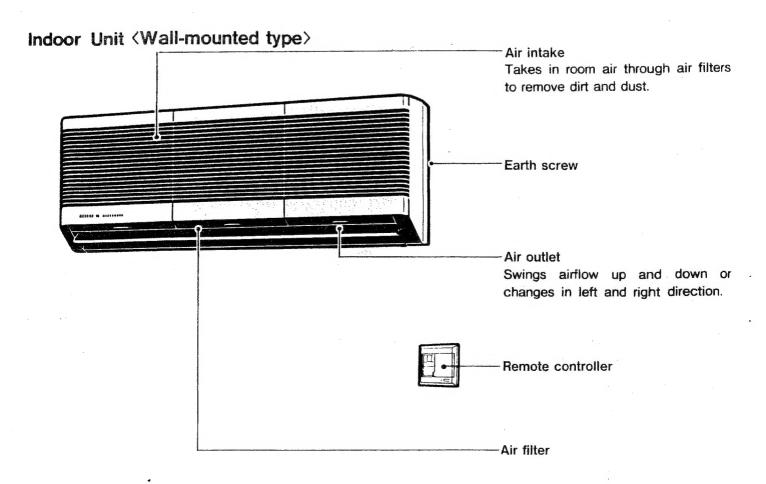
CONTENTS

Thank you very much for your purchase of our TOSHIBA air conditioner. Please read this manual carefully before starting operations with your air conditioner to ensure satisfactory performance. After reading the manual, be sure to keep it with you.

NAMES AND FUNCTIONS OF COMPONENTS		1
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PRECAUTIONS		6
NAMES AND FUNCTIONS OF CONTROLS		8
OPERATION	10~2	0
CARE INFORMATION	2	1
TROUBLESHOOTING		
INSTRUCTIONS FOR EXTENDED SERVICE LIFE		

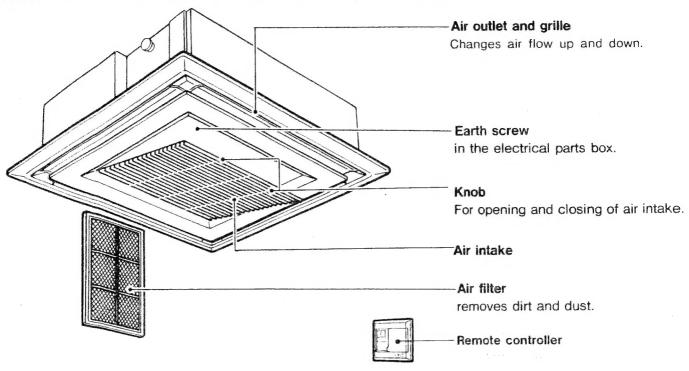
Indoor Unit (Ceiling type)



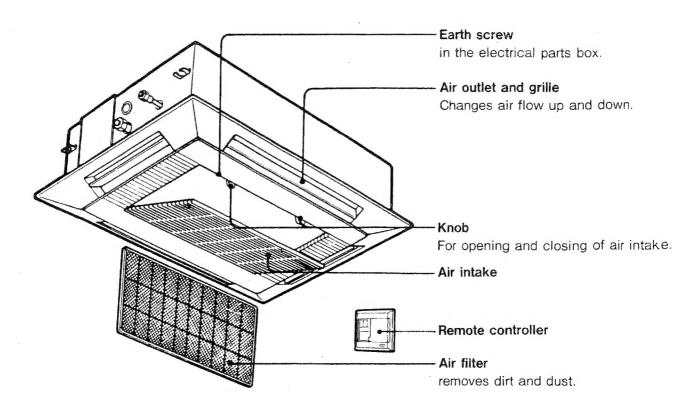


Indoor Unit (Cassette type)

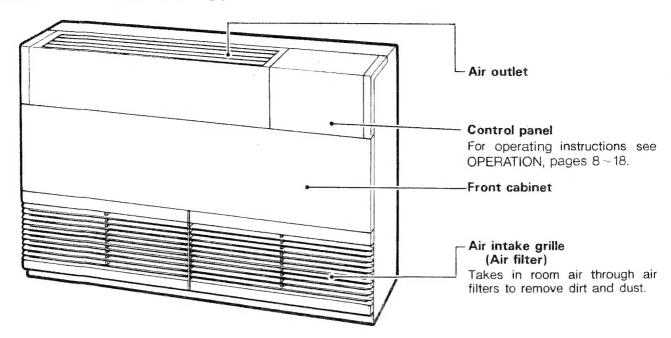
Model: RAV-453 UHE, 713 UHE8, 1003 UHE8, 1253 UHE8



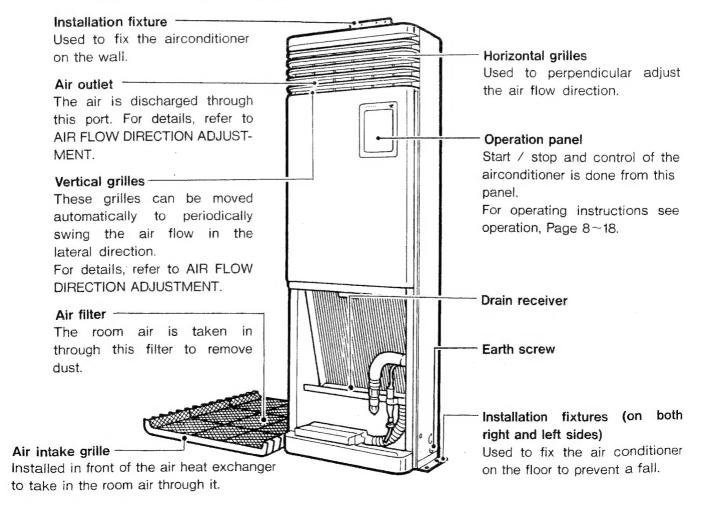
Model: RAV-160 UH, 260 UH, 360 UH, 460 UH



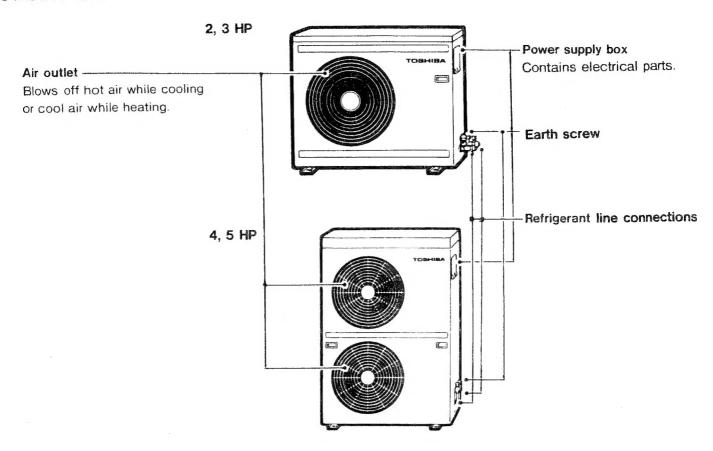
Indoor Unit (Console type)

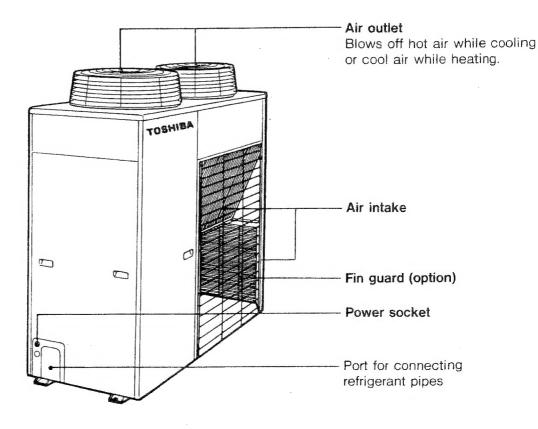


Indoor Unit (Floor-standing type)



Outdoor Unit





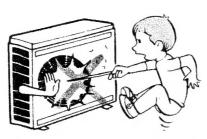
(Typical example: RAV-G1253HE8)

ADHERE TO THE FOLLOWING GUIDELINES

CAUTION

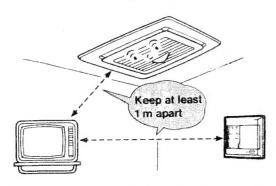
• Leave the air conditioner's power switch ON for at least 12 hours before operation. Do not turn the power OFF for short term stoppages such as a 24-hour period. (This is because power must be kept flowing to the crankcase heater and the compressor must be warmed so as prevent the outdoor unit from being placed under any strain during start-up.)

PRECAUTIONS



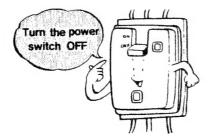
 Never poke a rod or any other thin object into the air intake or outlet of the indoor or outdoor unit.

This will be extremely hazardous because the blower is running at high speed inside.

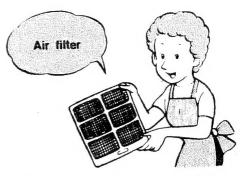


 Keep your TV set, radio, etc. at least 1m apart from the indoor unit or remote controller.

Interferences in video images or noises may result.

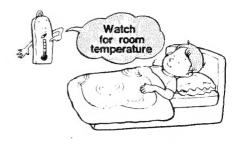


 Turn the power switch OFF when servicing the air conditioner or when it is found faulty.



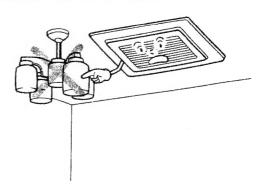
 Be sure that the air filter is installed at the air intake before starting the air conditioner.

If the air conditioner is run without the air filter properly installed, it will be more liable to failure as a result of taking in contaminated room air.

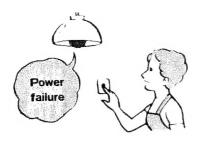


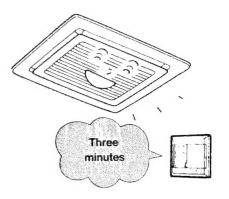
 For health, protect your skin against extended exposure to blown airflow.

This is especially important when running the air conditioner in rooms where physically handicapped persons, babies, children, senior, or sick persons are present. Watch for room temperature from time to time and adjust the air conditioner for maximum comfort to them.



 Before switching on the air conditioner, make sure that the air intake and outlet of the indoor and outdoor units are not blocked by obstacles.





If the electric power fails during operation, the air conditioner is initiated. After power is restored, press the ON/OFF button again.

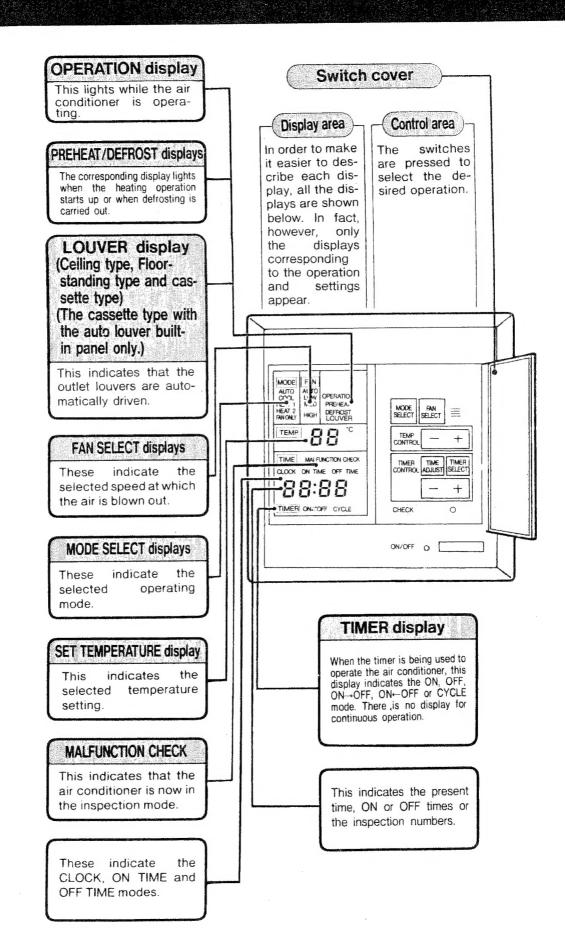
Your air conditioner may not start immediately after the ON/OFF button is pressed.
 Allow for about 3 minutes to let the air conditioner start running automatically. Also, the air conditioner, when restarted, will only blow air for about 3 minutes before cooling op-eration is resumed.

Operate the air conditioner only under these conditions:

Temperature	Outdoor temperature	10 ~ 43°C (COOL) -10 ~ 21°C (HEAT)
	Room temperature	21~32°C (COOL) 17~28°C (HEAT)
Room humidity		Less than 80% (COOL)

In heating, it operates on the principle of a heat pump, which absorbs heat from outdoors and discharges it indoors. As a result, the heating capacity tends to decline with drops in ambient air temperature. When ambient air temperature is low, your air conditioner may be run with the aid of a heating apparatus.

NAMES AND FUNCTIONS OF CONTROLS



Switch cover Display area Control area In order to make switches are pressed to it easier to describe each disselect the desired operation. play, all the displays are shown below. In actual fact, however, only the displays corresponding to the operation and settings appear. OPERATION PREHEAT DEFROS! HIGH + TIME MALFUNCTION CHECK TIMER CLOCK ON TIME OFF TIME 88:88 +TIMERI ON OFF CYCLE CF PCK 0 ON/OFF **CHECK** switch

MODE SELECT switch

This is used to select the desired operating mode. Each time it is pressed, the displays light up in the following sequence: AUTO → COOL → HEAT1→HEAT2→FAN ONLY

LOUVER OPERATION switch (Ceiling type, Floor-standing type and cassette type.) (The cassette type with the auto louver built-in panel only.)

This is used to drive the outlet louvers automatically when the air conditioner is in operation. When it is pressed, the LOUVER display lights and then the louvers will change in directions.

Give another press to stop it.

FAN SELECT switch

This is used to select the speed at which the cool or warm air is to be blown out.

Each time it is pressed, the displays light up in the following sequence: AUTO→LOW→MED→HIGH.

TEMP. CONTROL switches

These are used to adjust the room temperature. Press the — + switches to set the desired temperature. The indicated figure (18-29°C) serves as a guideline for the temperature settings.

TIMER SELECT switch

This is used to select either continuous operation or timer operation.

The following modes can be set with timer operation: ON, OFF, ON→OFF, ON←OFF and CYCLE. (For details, see page 15.)

BACK-UP BATTERIES

- * Three "Toshiba Mercury MR9 Batteries" (1.35V) are used to back-up.
- *To install the batteries, first insert an ordinary screwdriver into the bottom cut, remove the remote control cover and insert the batteries.
- * Do not use old batteries or different types of batteries together. This may result in malfunctioning.
- * Under normal conditions of use, the service life of the batteries is approximately 1 year.

Operating lamp

This lights while the air conditioner is operating. It winks when the power switch is set ON or when power is restored after a power failure, and it changes to the "lighted" status when operation begins.

ON/OFF button

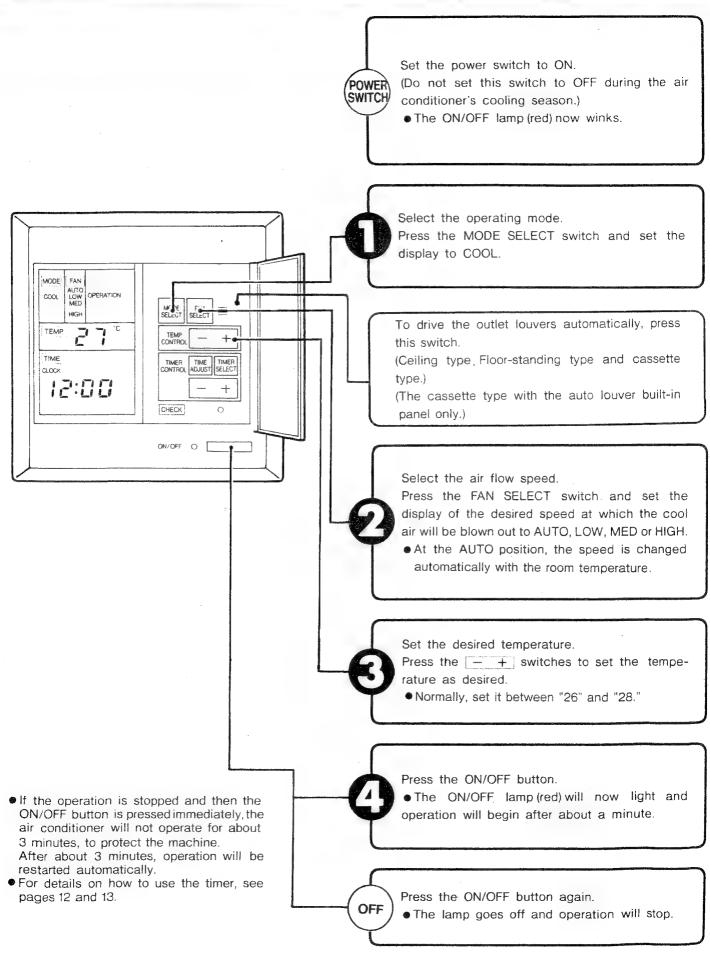
The air conditioner starts operating after a short pause when this button is pressed. It stops operating after a short pause when this button is pressed again

TIME ADJUST switch

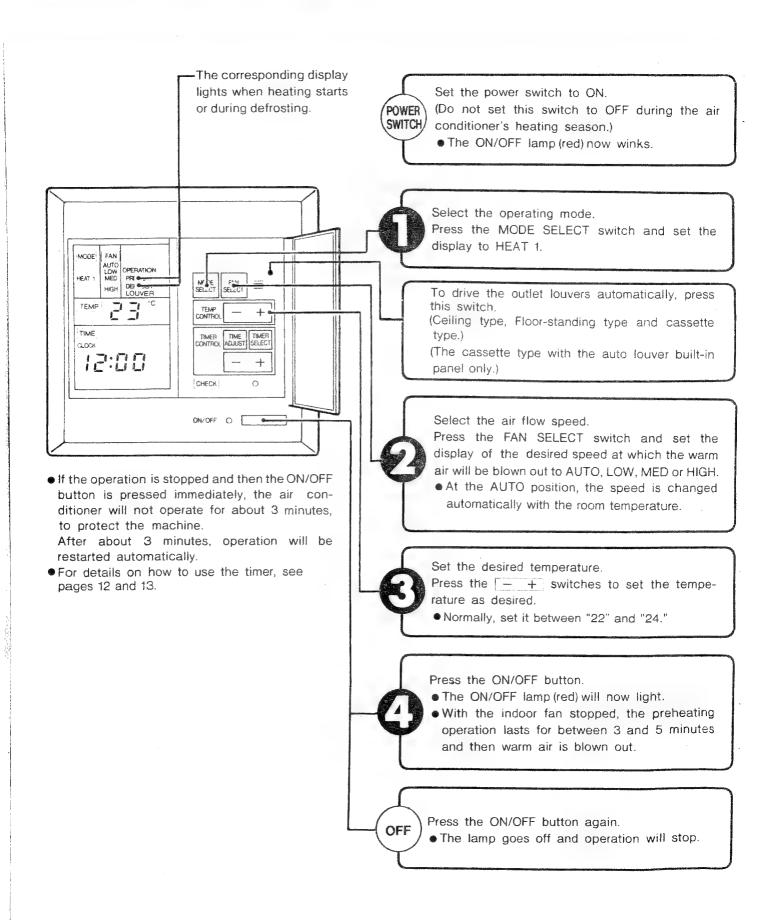
This is used to set the time for the CLOCK, ON TIME and OFF TIME mode. Each time it is pressed, the displays light up in the following sequence: CLOCK—ON TIME—OFF TIME. The time is set using the — + switches.

(For details, see page 14.)

COOLING OPERATION



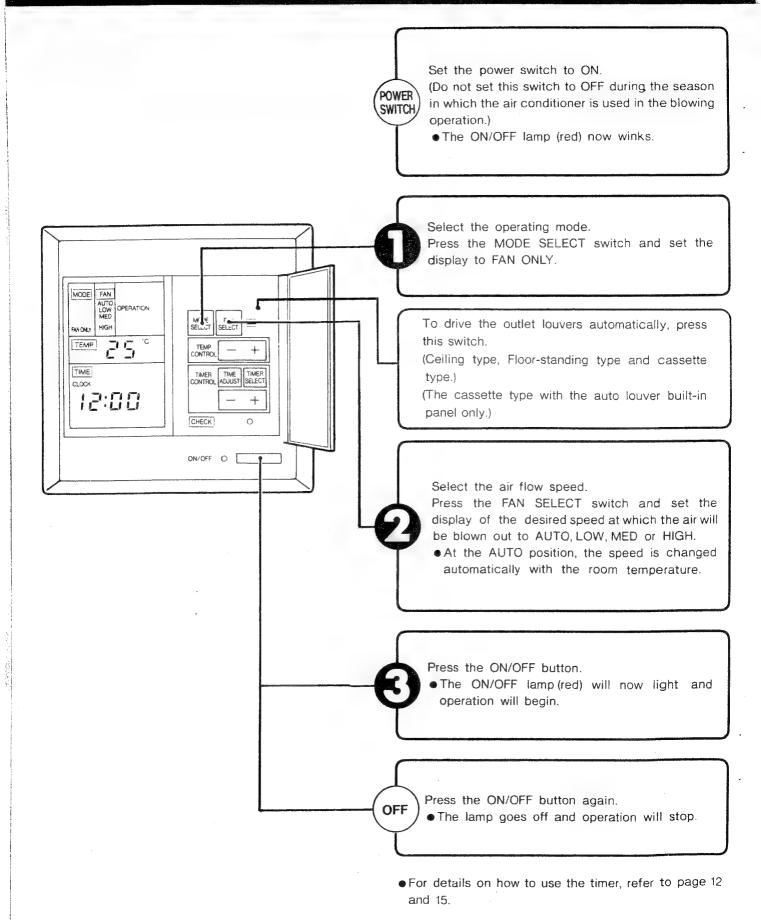
HEATING OPERATION



AUTOMATIC OPERATION

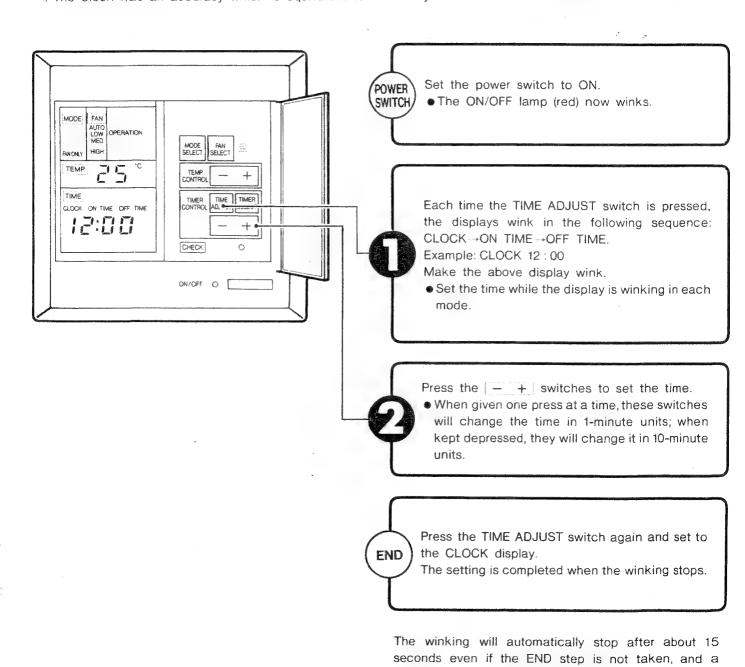
Set the power switch to ON. (Do not set this switch to OFF during the air POWER SWITCH, conditioner's operating season.) • The ON/OFF lamp (red) now winks. Select the operating mode. Press the MODE SELECT switch and set the display to AUTO. OPERATION To drive the outlet louvers automatically, press this switch. (Ceiling type, Floor-standing type and cassette TIME type.) CLOCA (The cassette type with the auto louver built-in 12:00 panel only.) CHECK ON/OFF O Select the air flow speed. Press the FAN SELECT switch and set the display of the desired speed at which the air will be blown out to AUTO, LOW, MED or HIGH. • At the AUTO position, the speed is changed automatically with the room temperature. Set the desired temperature. Press the - + switches to set the temperature as desired. Normally, set it between "22" and "28." Press the ON/OFF button. • The ON/OFF lamp (red) will now light. Firstly, the heating operation begins and then operating mode will change automatically corresponding to temperature setting and room • If the operation is stopped and then the ON/OFF temperature. button is pressed immediately, the air conditioner will not operate for about 3 minutes. This is in order to protect the machine. After about 3 minutes, operation will be Press the ON/OFF button again. restarted automatically. **OFF** The lamp goes off and operation will stop. For details on how to use the timer, see pages 14 and 15.

BLOWING OPERATION



TIME SETTING

- Before operating the air conditioner, set the present time in the following sequence.
 (The air conditioner can be operated without the present time being set but once it has been set, timer operations can be used and the time display will also serve as a clock.)
- Provided that the power switch is ON or the back-up batteries have been installed in the remote controller, the present time will be indicated at all times regardless of whether the air conditioner is operating or not.
- The 24-hour system is used to indicate the time. Thus, "13:00" is indicated at 1 o'clock in the afternoon.
- *The clock has an accuracy which is equivalent to a monthly error of less than 60 seconds.



The ON TIME and OFF TIME represent the times at which the air conditioner will be started and stopped automatically by the timer. As with the CLOCK, make the ON TIME and OFF TIME wink to set the times.

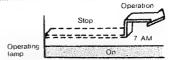
adjusted CLOCK display will appear.

TIMER OPERATIONS

First set the present time following the instructions on page 12 and then perform the timer settings.

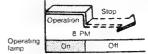
ON timer (stop⇒operation)

The air conditioner will begin operating at the preset time.

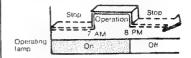


OFF timer (operation⇒stop)

The air conditioner will stop operating at the preset time.

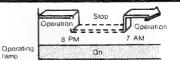


ON⇒OFF timer (stop⇒operation⇒stop) At the preset times, the air conditioner will start operating and then it will stop again.

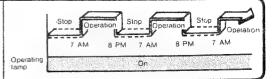


OFF⇒ON timer (operation⇒stop⇒operation)

At the preset times, the air conditioner will stop operating and then it will start again.



CYCLE timer (stop⇒operation⇒stop) (operation⇒stop⇒operation) Every day the air conditioner will start and stop operating at the same times.





Press the TIMER SELECT switch and display ON, OFF, ON→OFF, ON←OFF or CYCLE.



First set the ON TIME and OFF TIME, and then press the ON/OFF button.

- The ON/OFF lamp (red) lights and timer operation starts.
- Only the ON/OFF lamp lights during operation standby.



Press the ON/OFF button once again.

- The lamp goes off even if there is still time remaining and operation stops.
- The ON TIME and OFF TIME are retained in the memory.



To stop the timer operation, press the TIMER SELECT switch and clear the ON, OFF, ON \rightarrow OFF, ON \leftarrow OFF or CYCLE display.



Set the desired times again above steps (1) and (2), and press the ON/OFF button.

• The ON/OFF lamp (red) lights and timer operation starts.

Operating Instructions

- Your air conditioner may not start cooling or heating immediately after the ON/OFF button is pressed. Allow for about 3 minutes to let the air conditioner start running automatically. Also, the air conditioner, when restarted, will only blow air for about 3 minutes before cooling or heating operation is resumed.
- Avoid frequent mode transfers between cooling and heating, which may cause a trouble.
- The air conditioner is liable to malfunction due to abnormal signals caused by lightning or car radio. To protect against such malfunction, set the power switch to OFF, then to ON again.

Auto-Defrost Operation

- During heating operation in winter, the heat exchanger in the outdoor unit may be frosted under the condition of low ambient air temperature, with the result of declining heating capacity. The air conditioner automatically carries out defrosting in winter.
- During defrosting operation, the DEFROST display stays on and the blowers in the indoor and outdoor units are stopped. An opaque, misty current of chilled air may be found to arise from the outdoor unit at this time, but this is not a sign of failure.
- Defrosting operating is completed in less than 10 minutes.

Protective Device (High-Pressure Switch)

Automatically shuts down the air conditioner when it is overloaded.

The protective device may be tripped in any of the following situations.

While Cooling

- The air intake or outlet of the outdoor unit is blocked.
- The ambient temperature at which the outdoor unit is in operation is 43°C or higher.
- The air conditioner has been run over extended periods of time at room temperatures above 32°C.
- The air outlet of the outdoor unit has been exposed to strong gusts of wind.

While Heating

- The ambient temperature at which the outdoor unit is in operation is 21°C or higher.
- The ambient temperature is high and the room temperature exceeds 28°C.
- The air filter is clogged with an unusually large amount of dust or dirt.
- The air outlet of the indoor unit is blocked.

To reset the protective device:

- 1. Turn off the power switch.
- 2. Remove the condition that caused the protective device to be tripped.
- 3. Turn on the power switch, and restart the air conditioner as instructed in OPERATION, pages $8\sim18$.

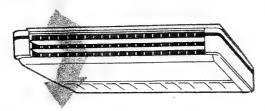
(CEILING TYPE)

The horizontal louvers can be driven automatically to enhance cooling or heating effect.

Horizontal adjustment

Automatic louver operation

Press the LOUVER OPERATION switch, the horizontal louvers will change in directions and the wind will blow out widely.



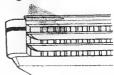


Fixed louver use

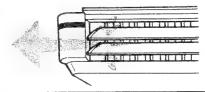
Select the good louver direction depending on cooling or heating to promote air-conditioning effect, when the louvers are fixed in a direction. To change louver directions, press on and off the LOUVER OPERATION switch.

During cooling operations

In case of cooling, be sure to set the louvers to blow the air from front in order to get uniform circulation of a cool air throughout the room.

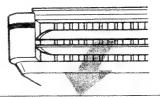


To get a longer reach of a cool air, it is effective that the louver position is set as the figure below.



During heating operations

In case of heating, be sure to make the louvers downward in order to deliver a hot air at you foot.

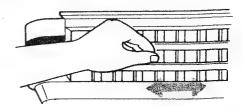


CAUTIONS

- Condensed dew may be dropped over the cabinet or louver surfaces during cooling operation with the louvered grille facing downward.
- The room temperature may be uneven during heating operation with the louvered grille facing horizontal.
- Don't move the horizontal louvers by hand, otherwise malfunction may occur.
 Use the LOUVER OPERATION switch on a remote controller to change the direction of louvers.
 It takes a few seconds after the LOUVER OPERATION switch was pressed to stop the louvers.
 Press the switch taking into account the fact above.

Lateral adjustment

To change lateral directions of a blown out air, adjust the vertical louvers in back of the horizontal ones as you like.

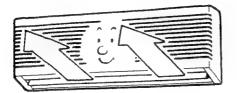


<WALL-MOUNTED TYPE>

Horizontal adjustment

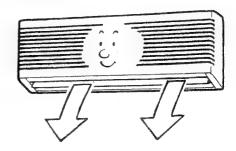
During cooling operations

In case of cooling, be sure to set the louvers to blow the air from front in order to get uniform circulation of a cool air throughout the room.



During heating operations

In case of heating, be sure to make the louvers downward in order to deliver a hot air at you foot.





CAUTIONS

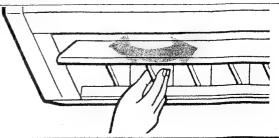
Condensed dew may be dropped over the cabinet or louver surfaces during cooling operation with the louvered grille facing downward.

CAUTIONS

The room temperature may be uneven during heating operation with the louvered grille facing horizontal.

Lateral adjustment

To change lateral directions of a blown out air, adjust the vertical louvers in back of the horizontal ones as you like.



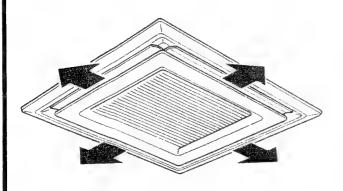
(CASSETTE TYPE)

To further improve the effects of cooling and heating, use the outlet louver appropriately for cooling and heating operations. When you press the auto louver switch the auto louver built-in panel only, the outlet louver automatically adjusts itself to improve the cooling and heating effects.

(The illustration shows type RAV-453 UH)

During cooling operations

In order for the cool air to be spread evenly throughout the room, set so that the air is blown out horizontally.

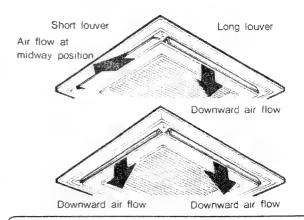


CAUTION

If cooling operations are conducted when the air is blown downward, condensation may form on the surfaces of the air outlets or louvers and dripping may result.

During heating operations

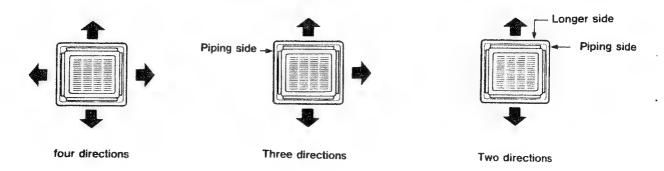
Set the long louvers to the downward position, and set the short louvers to the midway position when heating the entire room or to the downward position when heating at floor level.



CAUTION

The temperature throughout the room may deviate greatly if the room is being heated with the air blown out horizontally.

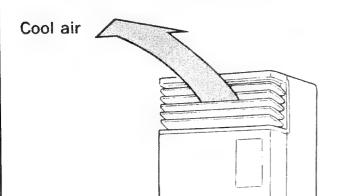
• Choose the number of air flow directions as required depending on the shape of the room and the location of the indoor unit.



(FLOOR-STANDING TYPE)

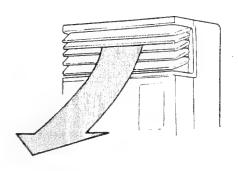
Horizontal adjustment

During cooling operations



Turn up the horizontal grilles at the air outlet.

During heating operations



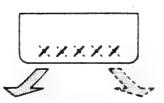
Hot air

• Turn down the horizontal grilles at the air outlet.

Lateral adjustment

Automatic louver operation

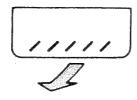
Press the LOUVER OPERATION switch, the horizontal louvers will change in directions and the wind will blow out widely.



Fixed louver use

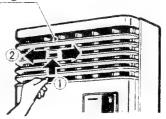
Select the good louver direction depending on cooling or heating to promote airconditioning effect, when the louvers are fixed in a direction.

To change louver directions, press on and off the LOUVER OPERATION switch.



Distributed air flow

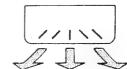
Vertical grille

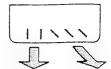


Lift a vertical grille and turn it to a desired direc-

Then, release a hand.

Example:

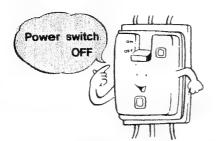




CARE INFORMATION

CAUTIONS -

Turn the power switch off before starting to maintain your air conditioner.



To prevent degraded electrical insulation, never try to clean the air conditioner by directly spraying it with water.



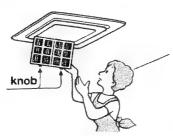
Ant latte a Validentine

Air flow is reduced and operating efficiency is lost as the air filter is clogged with dust. Clean the filter every two weeks at least if the air conditioner has been run in an especially dusty place.



● Removing the Air Filter 〈 Cassette type〉 Model RAV-453 UHE type

Tilt the two knobs to open the inllet grille, and pull the air filter out.



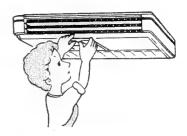
Model RAV-160 UH type

To draw out the air filter, pickup the "knob" of the inlet opening with the both bands, then gradually open it downward, pushing the arrow marked part of the air filter inwardly to be out of the hooks.



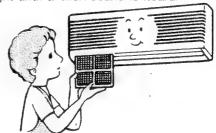
● Removing the Air Filter (Ceiling type)

The air filter is found inside the air inlet of the inside unit. Lifting the inlet up, pull the filter out rearward.



Removing the AirFilter<Wall-mounted type>

Pull down filter by holding in the middle. To install, insert it upright until a click sound is heard.



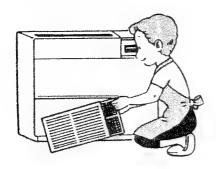
● Removing the Air Filter 〈Floor-standing type〉

The air filter is found insicle the air inlet of the internal unit. Lifting the inlet up, pull the filter out rearward.



Removing the Air Filter (Console type)

Push down and remove the air intake grille. Pull the air filter from the air intake grille.



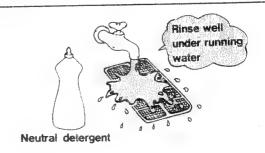
Cleaning the Air Filter

To remove dust from the air filter, use a vacuum cleaner or tap it lightly. If the filter is very dirty, immerse in lukewarm water or cold water and wash it by moving it up and down. A neutral detergent solution may simplify this work. After washing, rinse the filter with water and leave it in the shade to dry thoroughly.



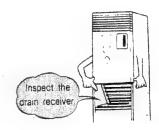
CAUTION

Avoid using hot water at a a temperature of 40° °C or higher, can cause the filter to be deformed or discolored.



Drain Receiver Inspection (Floor-standing type)

The drain receiver collects water removed fron the air. Clogging a port in the receiver with dust and foreign matters causes an overflow of collected water. Therefore, check it once a month.



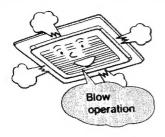
Single explain

Surface dirt on the grille or cabinet can be easily wiped off with a soft cloth dipped with cold water or lukewarm water at a temperature of 40°C or below, or with neutral detergent solution if extra efficiency is desired. When a neutral detergent has been used, wipe it away thoroughly with a soft cloth wet with water.

cold water
r lukewarm
water

CAUTION -

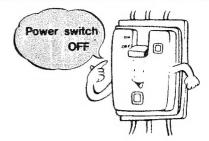
Never use gasoline, benzine, thinner or the like or spray a liquid insecticide on the plastic surfaces. These pharmaceuticals could cause the surface coating to be stripped or the plastic surfaces to be cracked or deformed.

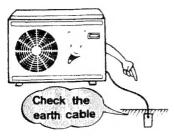


Leave conditioner the blowing air for about half a day to allow the interior to dry completely.



 Clean the air filter and install
 Turn OFF the power switch. it in original position.





 Check the earth cable for any defect.



Read PRECAUTIONS.

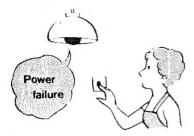


Remove dust from over the outdoor unit.

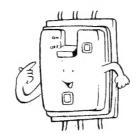
- The cassette type unit has a built-in draining pump. When the unit is used in an oily and dusty environment, the pump filter may become blocked. This condition will prevent the pumping out of water from the drain. Therefore, clean the pump periodically. Please consult the dealers for cleaning of the drain pump.
- Apart from the user explained on pages 21-23, maintenance service is suggested, which is available at cost from the dealer from whom your air conditioner was purchased for the interiors of the air conditioner could get dirty, with ensequent loss of operating efficiency, over several seasons of operation.

Before requesting service, check the following points.

•If your air conditioner does not run.



Suspect a power failure



Power fuse blown circuit or breaker tripped.

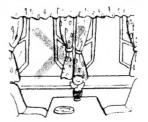
If your air conditioner blows air but does not cool well.



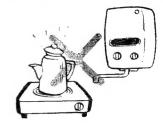
 Outdoor unit air intake or outlet blocked or poorly ventilated.



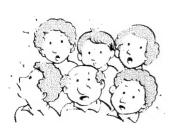
 Outdoor unit overheated under exposure direct sunlight or heat sources.



Door open.



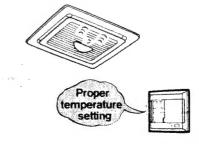
or window left . Heating apparatus, such as a water heater and an oven, used in the room.



Room overcrowded.



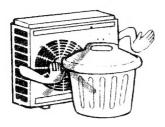
 Air filter clogged with dirt or dust.



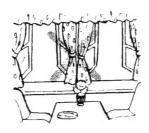
 MODE SELECT switch at FAN ONLY position. With the MODE SELECT switch being set at COOL, adjust the TEMP. CONTROL switch to a lower temperature.

If the problem still exists after all these checkouts, turn OFF the power switch and request diagnostics from the dealer from whom your air conditioner was purchased. The air conditioner is not customer serviceable.

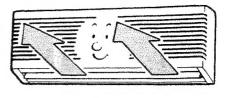
Olf your air conditioner blows air but does not heat well.

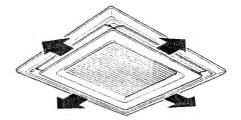


 Outdoor unit air intake or outlet blocked or poorly ventilated.

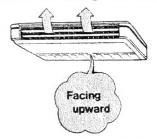


Door or window left open.





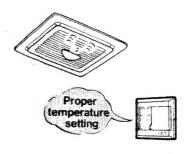
Air outlet facing horizontal.



Air outlet facing upward.



 Air filter clogged with dirt or dust.



 MODE SELECT switch at FAN ONLY position. With the MODE SELECT switch being set at HEAT 1, adjust the TEMP. CONTROL switch to a higher temperature.

If the problem still exists after all these checkouts, turn OFF the power switch and request diagnostics from the dealer from whom your air conditioner was purchased. The air conditioner is not customer serviceable.

INSTRUCTIONS FOR EXTENDED SERVICE LIFE

Take notice of the following instructions to use your air conditioner with both safety and comfort over extended time periods.

OLOCATION

- Install both the indoor and outdoor units on a foundation capable of fully withstanding their weights and vibration.
- Allow sufficient space around the air intake and outlet to provide adequate ventilation
- Your air conditioner removes moisture from room air when cooling. Allow the water to be drained completely.
- Avoid installing the air conditioner in a place likely to be exposed to an inflammable gas.

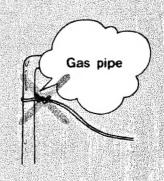
- The air conditioner is liable to be accelerated failure when used in certain special environments-such as places containing oils (including machine oils), salt (as on coastal areas), and sulphide gas (as in spa). The air conditioner, when installed in these places, requires special maintenance. Check with your dealer.
- Locate the outdoor unit where its hot air and noise will not cause a nuisance to your neighbors.
 - Avoid installing the outdoor unit where strong winds could hit the air outlet.

WIRING

- Be sure to keep your air conditioner earthed to protect against electrical shock hazards. Check with your dealer for further details.
- Operate the air conditioner from a dedicated power source.
- Law also requires the installation of a circuit breaker. Check with your dealer or an electrical contractor
- When the power fuse blows out, replace with a fuse with the same rating. Never substitute a wire or copper wire, which could cause a malfunction or even fire.

-CAUTIONS

- Where the earthe cable is connected to water piping, adequate earthing will not be established if a PVC pipe is used in the course of the piping.
- Never connect the earth cable to a gas pipe.



RELOCATION

Special techniques are involved in relocating the air conditioner. Relocation service is available at cost from your dealer.